



Hummingbird
SENSING TECHNOLOGY



Paracube[®] Micro



Magnetodynamic Paramagnetic O₂ gas sensor module

www.hummingbirdsensing.com



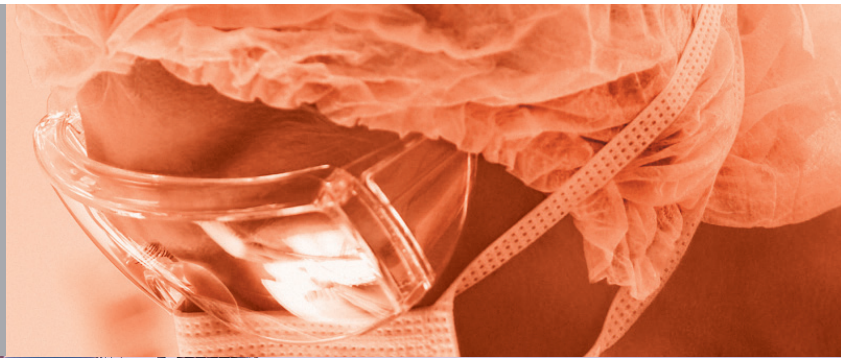
THE QUEEN'S AWARDS
FOR ENTERPRISE:
INNOVATION
2016

Paracube[®] Micro

O₂ gas sensor module



The revolutionary Paracube offers medical and industrial OEM manufacturers the combination of fit, form and function that delivers extensive performance and cost advantages over traditional electrochemical cells.



Performance in **Partnership.** 



Hummingbird
SENSING TECHNOLOGY

Hummingbird Sensing Technology: Our Business

Our detailed applications knowledge enables us to build cutting-edge sensor technology designed to meet customer needs

Our Values

Hummingbird operates to the highest standard of business ethics, ensuring we show each customer transparency and accountability in how we manage our customer relationships.

We are committed to:

- Long term partnerships
- Collaborative developments
- Full client and product confidentiality



ISO9001 Certified
Manufacturing Facility
Crowborough UK

Our product development is focused on designing sensors that deliver lifetime cost-of-ownership benefits to the end customer.

- Improved product reliability
- Lower cost of ownership
- Environmental compliance including RoHS

We deliver total assurance to your business

find out more: www.hummingbirdsensing.com



EASE OF
INTEGRATION



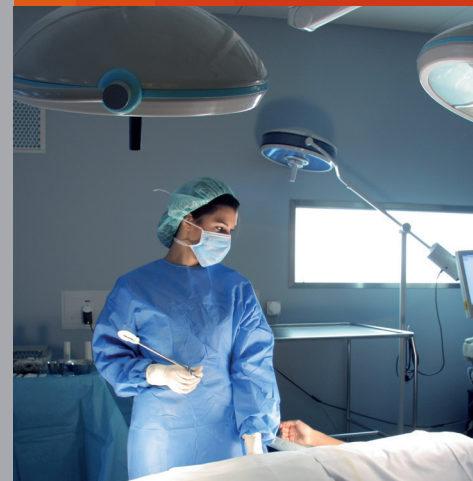
CONSULTATIVE
APPROACH



LONG TERM
PARTNERSHIPS



ON-GOING
ENGINEERING
SUPPORT



Paracube[®] Micro

O₂ Sensor module

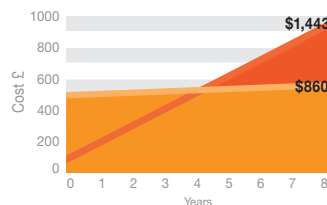


Specifications

At the heart of the Paracube Micro is Hummingbird's advanced non-depleting Magnetodynamic Paramagnetic cell, which offers a full measurement range of 0-100% and industry-leading levels of linearity, accuracy and reliability.



Image shown larger than actual size



Low Lifecycle Costs:

The non-depleting nature of Paramagnetic technology conclusively reduces the lifetime cost of ownership in comparison to Electrochemical cells

Paracube[®] Micro ■ Electrochemical ■

Typical applications include:

Critical care ventilators, neonatal incubators, anaesthesia delivery systems & area monitoring.

SPECIFICATION

Features

- Excellent linearity and accuracy
- Non consumable technology resulting in zero ongoing cost of ownership
- RoHSII compliant alternative to electrochemical cells
- Daily calibration eliminated due to excellent measurement stability
- Analogue and digital signal outputs
- Exceptional reliability offered by innovative paramagnetic technology

Performance

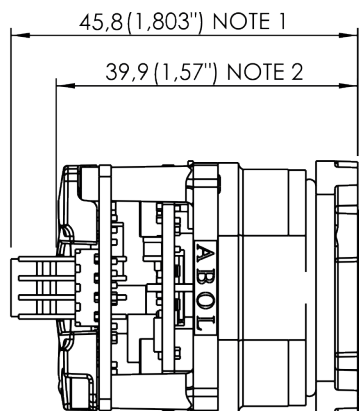
Technology: Paramagnetic
Range: 0-100% O₂ (with over range -15% O₂ to 200% O₂)
Accuracy (Intrinsic Error): <±0.2% O₂
Linearity: <±0.2% O₂
Repeatability: <±0.2% O₂
Zero Drift: <±0.4% O₂ in first 24 hours, then <± 0.2% O₂/week, then <±0.2% O₂/month
Response Time (T₁₀ - T₉₀): 11 to 20 seconds dependent on application and filter selection (biological filter on request)

Output/Controls

Signal Output: Serial, full duplex UART (5V signalling levels) 200msec update rate, 9.6 kbd or 19.2 kbd.
 Linear mV outputs (0.5mV or 10mV per % O₂)

Physical

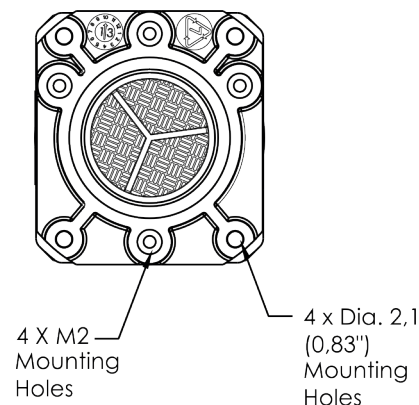
Weight: 70g (2.47oz)
Dimensions: Molex KK connector: 33.5 x 30.0 x 46.1mm (1.32 x 1.18 x 1.81")
 Molex low profile connector: 33.5 x 30.0 x 37.6mm (1.32 x 1.18 x 1.48")
Diffusion Port: Aperture diameter: 15.5mm (0.61")



NOTE 1: MAX. Length using Molex KK Connector

NOTE 2: MAX. Length using SMT Low Profile Connector

COMMON INTERFACE



4 X M2
Mounting
Holes

4 x Dia. 2,1
(0,83")
Mounting
Holes

All dimensions in millimetres (inches)

Ambient Conditions

Operating Temperature:	5°C to 50°C (41°F to 122°F)
Storage Temperature:	-30°C to 70°C (-22°F to 158°F)
Temperature Coefficient:	Within a range of 0°C to 50°C: Zero: $<\pm 0.5\% \text{ O}_2/10^\circ\text{C}$, Span: $<\pm 0.5\% \text{ O}_2/10^\circ\text{C}$
Operating Pressure Range:	$\pm 33\text{kPag}$ ($\pm 5\text{psig}$)
Ambient Humidity:	0 to 95% non-condensing
External Power Supply:	5V dc, 70mA nominal
Power Consumption:	350mW
EMC:	This product has no intrinsic function, and as such, cannot be given a CE mark. However, provided it is installed in accordance with good engineering design and build standard, the product will meet the European standards for EMC
Shock and Vibration:	Meets requirements of BS EN 60068-2-6:1996 (IEC 68-2-6), BS EN 60068-2-27:1993 (IEC 68-2-27), IEC 68-2-34, BS EN 150 80601-2-12-2011, ISO 80601-2-55
RoHS:	Complies with RoHSII directive 2011/65/EU

Sample Conditions

Sample Gas Condition:	Clean dry gas, free of entrained oil, particulates $<3\mu\text{m}$, non condensing
Gas Exchange:	Diffusion

Wherever you are, we are.

Our international team cover the world's industrial and medical markets



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